Message

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Sent: 8/24/2018 11:48:44 AM
To: Der Boghosian, Shantal [US] (ES) [Shantal.DerBoghosian@ngc.com]
CC: Mora, Rebecca [Rebecca.Mora@aecom.com]; Levine, Herb [Levine.Herb@epa.gov]
BCC: MORASH, MELANIE [morash.melanie@epa.gov]
Subject: EPA Comments - Revised Well Installation WP for the TRW Microwave Site
Attachments: Suggested Well Location Figure_Aug 2018.pdf

Good morning, Shantal,

Thank you for submitting the *Well Installation Report, Former TRW Microwave Site, 825 Stewart Drive, Sunnyvale, California* (Report), prepared by AECOM Inc. (AECOM), dated May 3, 2018. The Report was prepared on behalf of Northrop Grumman Systems Corporation (Northrop). The Report summarizes field activities related to installation and sampling of five new wells and recommends that well T-9B be properly destroyed. These field activities were described in the previously submitted *Well Installation Work Plan, Former TRW Microwave Site, 825 Stewart Drive, Sunnyvale, California* (AECOM, 2017), which was approved by EPA.

In a separate e-mail, comments will be provided on your May 2018 annual groundwater report.

General Comment:

EPA appreciates the investigative and remedial work that Northrop and AECOM have conducted to obtain a deeper understanding of contaminant pathways at the TRW Site and accelerate the groundwater cleanup. The work described in the Report improves the Conceptual Site Model (CSM) for the TRW Site by resolving uncertainties in the interpretation of hydrostratigraphic units (HSUs) and contaminant migration in the B1 groundwater aquifer. Stratigraphic, hydrogeologic, and chemical data collected along the western and southern portions of the site support the existence of three B1 aquifer HSUs acting as preferred pathways for contaminant migration. The presence of Freon 113 and elevated trichloroethene (TCE) associated with HSUs in these areas indicates an onsite influx of contaminants from an offsite source(s).

EPA understands your wish to resolve the question of whether well T-9B may be abandoned in order to finalize your field work schedule. However, we would like you to consider the following set of comments regarding the robustness of your data set from the northern portion of the TRW Site in support of three individual B1 HSUs, and respond as to whether Northrop would be willing to install another set of dedicated wells in each HSU (see attached map with a suggested location for a new direct-push well) to ascertain the source of the elevated TCE observed in well T-9B.

Specific Comments:

1. Section 2.1, Pages 2 & 3 – Hydropunch groundwater samples from BH9 should be considered screening level data only and do not have the precision to justify a more rigorous evaluation using ratios of individual analytes. The lack of precision inherent in the hydropunch samples is reflected in the variability between the depth discrete hydropunch sample data and the subsequent well analytical data. The assertions based upon ratios of analyte concentrations of hydropunch samples should include uncertainties associated with direct-push groundwater samples (EPA, 2005).

2. Section 2.2, Page 2 – The boring logs for borehole BH9 and the three new wells, T-22B, T-23B, and T-24B, show appreciable lithology variability in regard to the screened intervals of the two shallow wells. The SW noted on

the boring log for well T-22B is at variance with the SM noted on the boring logs for wells T-23B and T-24B. However, the SW indicated on the well T-22B boring log is supported by the well development and purge data indicating relatively good yield that is consistent with SW material. This situation is not reflected in the soil types coincident with the screened interval of well T-23B. The SM indicated on the boring log for well T-23B is coincident with substantial silt (ML) layer on the boring logs for both borehole BH9 and well T-24B. Well development and purge data for T-23B indicates a very poor yield suggesting that the ML may be more representative of this interval than the SM indicated on the well T-23B boring log. Please discuss the uncertainty associated with the assertion that this well represents a significant HSU.

3. Section 3.0, Pages 3 & 4 – Stratigraphic, hydrogeologic, and chemical data suggest that wells T-20B and T-21B represent a unique HSU that the Report refers to as HSU3. Please discuss the uncertainty associated with the data for the northern portion of the TRW Site that you draw upon to suggest three distinct HSUs in this area. Stratigraphic data for the northern portion of the TRW Site may suggest variability in soil types that may not represent site-wide HSUs. Results of analyses of groundwater from wells T-22B, T-23B, and T-24B are very similar, except for 4.0 micrograms per liter of vinyl chloride in well T-24B. Please provide additional analysis or arguments to support independent HSU flow paths and discrete HSUs based on apparent subtle lithologic differences and minor chemical composition.

4. Section 3.0, Page 4 – Concentrations of TCE and to a lesser extent *cis*-1,2-dichloroethene (*cis*-1,2-DCE) found in groundwater at well T-9B were significantly greater than that found in groundwater samples from BH9 or in wells T-22B, T-23B, and T-24B. The Report suggests that the elevated TCE concentration found in groundwater at well T-9B is a function of back-diffusion resulting from historic extraction operations in T-9B that terminated in 2001. However, if back-diffusion were occurring, would it not occur at a relatively uniform rate, which is not reflected in the historic TCE levels in this well? In addition, the assumption of impacted diffusion-limited strata acting as a residual source for the elevated TCE concentration in well T-9B should be reflected in materials encountered in borehole BH9 and to a lesser extent in the nearby new wells, which does not appear to be the case. Alternate scenarios should be presented. For example, the gravel unit at 29 feet bgs in well T-9B may be the source of elevated TCE that was not encountered in borehole BH9 or the new wells. Please provide additional data or analysis to support your arguments regarding the source of elevated TCE in groundwater at well T-9B.

Comments on Report Conclusions/Recommendations:

EPA respectfully requests that you consider collecting additional data or developing further analysis to confirm the existence of three unique HSUs in the northern portion of the TRW Site. Based upon the stratigraphic and chemical data from T-9B, BH9, and T-23B, it appears that the coarse-grained unit at about 24 feet bgs can be considered HSU3 and the coarse-grained material between 33 and 37 feet bgs can be considered HSU2. However, it appears that some uncertainty exists as to whether T-23B represents HSU1. HSU1 does appear to be present in the northern portion of the TRW Site as a coarse-grained unit, as clearly evident at this stratigraphic interval on the boring logs for T-9B and T-9C and on the MIHPT log of BH8 (AECOM, 2016b). A new continuously cored direct-push boring with depth-discrete groundwater sampling located between T-9B and BH8 (see the attached figure) may identify HSU1 in this area and allow installation of a dedicated well into this HSU.

Next Steps:

Please review EPA's comments and submit a response-to-comments letter by October 31, 2018.

Sincerely,

Melanie

Melanie Morash, Project Manager
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References:

AECOM, 2016a, *Conceptual Site Model Former TRW Microwave Site, 825 Stewart Drive, Sunnyvale, California.* April 19.

AECOM, 2016b, *Background Water Quality Evaluation Report, Former TRW Microwave Site, 825 Stewart Drive, Sunnyvale, California*, November.

AECOM, 2017, *Well Installation Work Plan, Former TRW Microwave Site, 825 Stewart Drive, Sunnyvale, California*. April.

AECOM, 2018, *Well Installation Report, Former TRW Microwave Site, 825 Stewart Drive, Sunnyvale, California*. May 3.

US Environmental Protection Agency, 2005, *Groundwater Sampling and Monitoring with Direct Push Technologies,* EPA 540/R-04/005, August.

From: Der Boghosian, Shantal [US] (ES) [mailto:Shantal.DerBoghosian@ngc.com]
Sent: Monday, August 20, 2018 2:54 PM
To: MORASH, MELANIE <morash.melanie@epa.gov>
Cc: Mora, Rebecca <Rebecca.Mora@aecom.com>
Subject: FW: Submittal of Revised Well Installation WP for the TRW Microwave Site

Hi Melanie!

Hope you're doing well! I'm following up with you regarding the May 7th email referenced below to see if you had a chance to review the well installation report. Do you have any questions/comments we can answer?
In our conclusions and recommendations we suggested abandoning well T-9B and wanted to know if we could proceed with destroying the well? Our next groundwater sampling event is coming up and I'd like to schedule the well abandonment this year, if possible.

Looking forward to hearing from you!

Shantal